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SUNNYSIDE GOLD CORPORATION
AN ECHO BAY COMPANY

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JAN 17 1995

January 12, 1995

Division of Minerals & Geology

J. David Holm, Director
Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Dear Dave,

Per our agreement reached at the meeting of December 16th, enclosed please find two copies of "Sunnyside Gold Corporation's Voluntary Mitigation Assumptions and Position".

We look forward to discussing both our position and the Water Quality Control Divisions positions and assumptions on January 20th.

If you have any questions or feel there is additional information which we can bring to the meeting, please call.

Sincerely,

William B. Goodhard
Resident Manager

cc: w/ enclosures
Amelia S. Whiting
Mike Long
William Robb
Chris Hayes
David Naccarati
Larry Perino

WBG/cjm

File M-77-378



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**SUNNYSIDE GOLD CORPORATION'S
VOLUNTARY MITIGATION ASSUMPTIONS AND POSITION**

DATE: January 12, 1995

Sunnyside Gold Corporation's
Voluntary Mitigation Assumptions and Position

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**Assumptions of Sunnyside Gold Concerning Contemplated Voluntary
Cleanup Activities**
Upper Animas River Basin, Colorado
DATE: January 12, 1995

1. Proposals for voluntary cleanup are part of a privileged and private settlement negotiation between Sunnyside Gold Corporation ("SGC") and the Water Quality Control Division of the Colorado Department of Public Health and Environment ("WQCD"). This discussion is being entered into to resolve issues that gave rise to the lawsuit captioned Sunnyside Gold Corporation v. Colorado Water Quality Control Division, Colorado Department of Health, Civil Action No. 94CV 5459.
2. The Sunnyside Mine represents a technically sound place to use hydraulic seals to effect mine closure as part of final reclamation. SGC and state agencies believe that plugging of the Sunnyside Mine is the best and most technically feasible approach to ending drainage from the mine, as part of the overall plan for final reclamation.
3. Placement of the main hydraulic seal within the American Tunnel will result in the filling of the mine workings over a period of time. This will eventually reverse the artificial hydrological conditions that currently exist within the mountain, and return the groundwater flow regime within the mountain to nearly natural conditions. Sealing and flooding the mine may have effects that include, but are not limited to, the eventual migration to the surface of water from the filled mine pool as pool water becomes part of the hydrological regime, and changes in flow of natural seeps and springs as water that formerly flowed into the cone of depression of the mine and out the American Tunnel resumes its natural flow paths around the mine. Voluntary cleanup activities undertaken by SGC as a result of this negotiation will be deemed to be mitigation for potential effects of SGC's reclamation of the Sunnyside Mine by sealing and flooding its workings.
 - a. Once a program of voluntary cleanup is agreed upon, adopted, and carried out as agreed upon by the parties, WQCD will consider effects resulting from plugging of the Sunnyside Mine to have been mitigated, and will refrain from citing or prosecuting SGC, its parent, agents, officers, directors or employees in the event such effects are detected.

b. Agreed upon voluntary cleanup activities will be deemed complete, and SGC's obligations fulfilled, when the agreed upon work is performed. WQCD will not revise its requests for work or demand additional work after monitoring the water quality effects of the agreed upon work.

c. After completion of the agreed upon work, plugging and sealing of the mine opening, performance by SGC of all obligations under its Reclamation permit, cessation of discharge of water from the American Tunnel or assumption by another party of permit responsibility for such discharge, and release of its Reclamation permit, SGC will be released from its permit obligations under the Colorado Water Quality Control Act and regulations, with the exception of the following contingency:

i. Limited quantities of water may escape from the mine through the Brenneman Vein after filling of the mine pool. The mitigation proposed for this settlement is intended to mitigate effects of this eventuality, should it occur. In the event that significant quantities of water escape directly from the mine via other, unpredicted, identifiable discrete passageways following closure, SGC will assume responsibility for the control of such water. Should such escape occur, SGC will consult with WQCD and DMG and devise control strategies to deal with the escaping water. Such strategies may include performing additional mitigation, grouting of fractures, treatment of the escaping water or drawdown and treatment of the mine pool to control escape, if necessary. As long as SGC is working in good faith to control such escape, WQCD will exercise regulatory discretion in SGC's favor to the extent that it can, and refrain from citing or levying large fines against the company.

4. SGC assumes that the quality of any water migrating from the mine via normal groundwater mechanisms following closure and flooding will not be any worse than the quality of water migrating through the mountain but not entering the mine, because hydrogeochemical processes within the flooded mine workings and the mountain following flooding will return the hydrological regime to a close approximation of its pre-mining state.

5. Water flowing around the flooded workings following closure is not part of SGC's regulatory responsibility.

6. SGC is not required by statute or regulation to continue discharging treated water from the American Tunnel for the purpose of providing dilution flows to protect downstream water quality.
7. Offsite voluntary cleanup performed as mitigation should not expose SGC to additional risk of liability under state or federal hazardous waste or clean water laws (state or federal CERCLA, RCRA, or Clean Water Acts). DMG, WQCD and SGC will cooperate to structure any offsite mitigation activities so as to receive available "good samaritan" protection.

Basic Technical Assumptions

1. Simon Hydro-Search, Evaluation of Hydraulic and Hydrochemical Aspects of Proposed Bulkheads-Sunnyside Mine-San Juan County, Colorado (March 12, 1993) provides the range of water quality and flow rates for waters passing through the Sunnyside Mine after valve closure.
2. Zinc is the primary metal of concern to WQCD. Mitigation targets and goals were based on zinc loading because of that preference.
3. Calculated metal loading from stormwater events will be converted to daily loading for mitigation goals and loading comparisons.
4. There is a credit against calculated impacts to be calculated based on existing numerical discharge limits and background water quality.
5. Sunnyside Gold Corporation will be given credit for mitigation projects recently completed, in progress, or planned on their property.

Remediation Project Evaluation Scope, Methodology, Assumptions and Followup Recommendations

1. General Scope:

Sunnyside Gold has performed a reconnaissance level study of the Upper Animas area to target potential remediation sites. In order to rate projects, simplifying assumptions were made for each category of project. These project categories are;

- a. Adit Flow Diversions from Dumps
- b. Portal Bulkheads or Constructed Wetlands
- c. Best Management Practice (BMP) Projects (i.e. cover or remove tailings and dumps to minimize contact with water)

2. Loading Evaluation Methodology and Assumptions:

a. Adit Flow Diversions

Methodology:

- Water samples were taken at the portal and below the dump.
- Analysis was for a combination of total and dissolved metals. Except for one site, comparisons were made using the same type of analysis.
- Water quality above and below the dump was compared for improvement or degradation.

Assumptions:

- Flow leaving the portal equaled the surface flow exiting the site.
- Precipitate being deposited stays on or within the dump.
- Loading from project(s) where degradation is occurring will be based on average flow from best available data.
- Projects are feasible from an ownership and liability standpoint.

b. Portal Bulkheads or Constructed Wetlands

Methodology:

- Sample data was collected from CDH Upper Animas Study and SGC sampling.
- Average loading values were determined from available data.
- A short list was made by eliminating any sites with Zn concentration <BAT limits or ZN loading <4 lb/day.

Assumptions:

- Bulkheads or constructed wetland remediation are technically feasible.
- Project would be 70% effective for metal loading reduction.
- Projects are feasible from an ownership and liability standpoint.
- Flows were either the average of available flow data or constant if only one measurement was available.

c. BMP Projects

Methodology:

- Tailings Ponds were sampled.
- Mine dumps and related disturbances were sampled based on field paste pH.
- Samples were analyzed for total metals.
- Samples were analyzed for dissolved metals using TCLP-1312 exposure method.
- Samples were analyzed for dissolved metals after a 1:1 sample:water 30 minute bath.
- A stormwater sample was taken at one of the sites for comparison to the prediction methods.
- Annual precipitation data was collected from two weather stations (Silverton and Red Mountain). Annual precipitation amounts were assigned to each site based on elevation @ 1/4 intervals between the weather stations (all sites are at or between the elevations of the weather stations).
- Other factors were noted (i.e. if surface flows exist or if groundwater is thought or known to be present) but not included in the evaluation to-date.
- Areas and volumes were roughly measured or estimated for initial evaluation.

Assumptions:

- TCLP-1312 exposure method is applicable in high water to solid ratio exposures (i.e. groundwater or surface water flow exposures).
- A 1:1 water-bath exposure method is applicable for most precipitation events.
- A 98% cleanup efficiency can be achieved over time for tailings BMP Projects.
- A 95% cleanup efficiency can be achieved over time for mine dump BMP Projects.
- 100% of average precipitation is available for metal transport.
- Projects are feasible from an ownership and liability standpoint.

3. Followup Recommendations:

- a. Check portal diversion projects with largest indicated dump attenuation for understanding mechanics (i.e. are the metals being retained and is the dump the key or is it oxidation).
- b. Gather information on portal candidates for bulkheads.
- c. Check water bath analysis for sensitivity to dilution ratio and exposure time.
- d. Quantify groundwater and surface water flow effects on sites noted to be affected if it is economically feasible.

SUNNYSIDE GOLD CORPORATION
SUNNYSIDE MINE BULKHEAD PROJECT at PROPERTY LINE

SIMON HYDRO-SEARCH REPORT (MARCH 12, 1993)-Summary of Modeled Results:

Case 1: Considered most likely. 70 GPM

Pool Elev.=11,562'

Discharge between 11,400' and 10,500' (calculated using 10,500' for gradient)

Case 2: Maximum possible case. 200 GPM

Pool Elev.=12,250'

Discharge between 11,400' and 10,500' (calculated using 10,500' for gradient)

Case 3: Addition to flow if preferential flow path exists along Brenneman Vein. 4 GPM

Pool Elev.=11,562'

Flow discharge at Mogul #1 Level (11,400')

Case 4: Maximum possible addition to flow if preferential flow path exists along Brenneman Vein. 160 GPM

Pool Elev.=12,250'

Flow discharge at Mogul #1 Level (11,400') and Mogul #3 Level (11,850')

Travel Time:

Case 1-Slow case. 4300 years

-Most likely case. 160 years

Case 2-Fast case. 9.6 years

Case 3-Most likely case. 16 years

Case 4-Fast case. 0.32 years

MODELED WATER QUALITY:

ANALYTE	REFERENCE WATER		***** DISCHARGE WATER *****			
	(1)	(2)	NO MIXING		MIX RATIO A.T. to T.T.	
	AMERICAN TUNNEL	TERRY TUNNEL	AMERICAN TUNNEL	TERRY TUNNEL	4:1	1:1
	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
Fe	2.75	13.24	ND	ND	ND	ND
Mn	8.08	77.78	ND	ND	ND	ND
Cu	ND	5.11	ND	5.11	0.26	0.24
Zn	5	47.6	0.97	47.6	8.98	22.5
Cd	0.04	0.19	0.006	0.19	0.01	0.04
Pb	0.025	1.05	0.025	1.05	0.18	0.44
pH	7.18	7.01	7.87	2.6	7.82	7.82

(1) Quality of an underground water source from an undisturbed mineralized area.

(2) Equilibrated untreated TERRY TUNNEL flow quality.